

Event-related potentials as evidence for a constraint based analysis of foot structure and foot parsing

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EEG-studies – Method

- EEG experiments on word stress in German trisyllabic words [1] [2]
 - Stress matching tasks with visual and auditory presentation
 - Stimuli: German words with different stress patterns and an odd number of syllables
- The words were presented either with their correct stress pattern or with an incorrect one, i.e. the position of word stress was manipulated or not.

An OT-Analysis based on EEG-studies

- The foot as necessary prosodic structure to explain the ERP-findings → **PARSE-σ** [3]
- Ternary patterns cannot explain the differences in strength of the positive deflections. → **FOOTBIN** [3]
- German is regarded as a trochaic system. If iambic feet are assumed, e.g. a stressed light antepenult (*('Vi)(ta,min)) involve a restructuring of feet resulting in a strong positivity effect. → **RHTYPE=T** [3]

RHTYPE=T, FOOTBIN » PARSE-σ

- Position of main stress: One of the last three syllables of a word carries main stress [4], i.e. a preference for the right word edge. → **RIGHTMOST (ALIGN(HEAD-Ft,R,PRWD,R))** [3].

/L.L.L/	RHTYPE=T	FOOTBIN	RIGHTMOST	PARSE-σ
L.L.L				**!*
('L.L)L			*!	*
L('L.L)				*
(L)('L.L)		*!		
('L.L)L		*!		
(L.'L)L	*!	*	*	

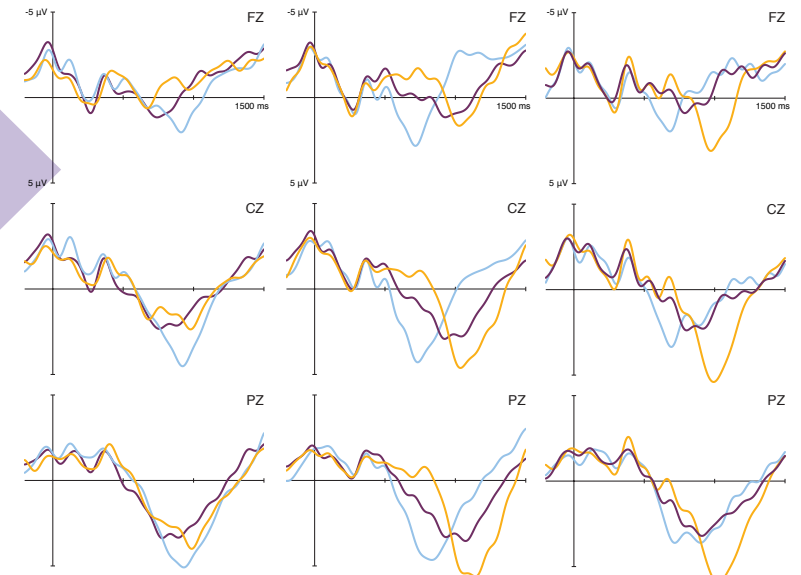
- The weight of the first syllable does not influence stress placement (cf. [5]): a possible side effect of high ranked *CLASH (subject to future experiment).

*CLASH, FOOTBIN » PARSE-σ

/H.H.L/	RHTYPE=T	*CLASH	FOOTBIN	RIGHTMOST	PARSE-σ
H('H.L)					*
(H)('H.L)		*!			

Antepenultimate stress (e.g. 'Ananas, 'Albatros) is an exceptional pattern and possibly lexically

Experimental results – event-related potentials



(('Al.ba)(tros) Bi('ki.ni) (Vi.ta)('min)
 *Al('ba.tros) *('Bi.ki)(ni) *('Vi.ta)(min)
 *(Al.ba)('tros) *(Bi.ki)('ni) *Vi('ta.min)

- The evaluation of misplaced stress leads to a positivity effect.
- This effect is stronger if syllables need to be reorganized into new foot structures.

prespecified. Pseudoword and clinical studies do not reveal any preference for stress on the antepenult or the ultimate syllable [5].

/L.L.H/	RHTYPE=T	*CLASH	FOOTBIN	RIGHTMOST	PARSE-σ
('L.L)H				*!	*
L('L.H)					*!
(L)('L.H)		*!	*		
('L.L)(H)				*!	
(L.L)('H)					

/H.L.H/	RHTYPE=T	*CLASH	FOOTBIN	RIGHTMOST	PARSE-σ
H('L.H)					*!
(H)('L.H)		*!			
(H.L)('H)					
('H.L)(H)				*!	

Conclusion

Word stress depends on the foot structure of a word. The experimental results provide us with independent external evidence for foot structure and foot parsing apart from language typology.